

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 42-47 are pending. Claims 3, 5, 11, 18, and 39-41 have been cancelled without prejudice or disclaimer; and Claims 42-47 have been added by the present amendment. The additions to the claims are supported by the originally filed specification and do not add new matter.<sup>1</sup>

In the outstanding Office Action, Claims 3, 5, 11, 18, 39, 40, and 41 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement; Claims 3, 5, 11, 18, 39, 40, and 41 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention; and Claims 3, 5, 11, 18, 39, 40, and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,710,620 to Taniguchi (hereinafter, “the ‘620 patent”) in view of U.S. Patent No. 6,388,386 to Kunii et al. (hereinafter, “the ‘386 patent”).

Regarding the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 under 35 U.S.C. § 112, first paragraph, it is respectfully submitted that the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 have been rendered moot by the present cancellation of those claims.

Regarding the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 under 35 U.S.C. § 112, second paragraph, it is respectfully submitted that the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 have been rendered moot by the present cancellation of those claims.

Regarding the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 under 35 U.S.C. § 103(a) as being unpatentable over the ‘620 patent in view of the ‘386 patent, it is respectfully submitted that the rejections of Claims 3, 5, 11, 18, 39, 40, and 41 have been

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<sup>1</sup> See, e.g., Applicants’ specification, page 22, lines 17-27; page 29, line 17 to page 30, line 5; page 31, line 5 to page 32, line 10; and page 32, line 25 to page 33, line 23.

rendered moot by the present cancellation of those claims. However, since new Claim 42 includes features similar to those recited in Claims 3, 5, 11, and 39, Applicants will address the '620 and the '386 patents cited in the rejections of those claims.

New Claim 42, directed to a crystallization apparatus, recites in part:

an image formation optical system provided on an outgoing radiation side of the phase modulation element, the image formation optical system configured to provide a light intensity distribution of ***a pattern in which a light intensity is at minimum at a central position and increases linearly towards a periphery in each unit area***, for a focal plane; and

a stage configured to support a substrate including a non-single crystal semiconductor film provided on an outgoing radiation side of the image formation optical system, wherein

the phase modulation element includes at least one ***phase modulation unit optically smaller than a radius of a point spread distribution range of the image formation optical system*** to provide the light intensity distribution of the pattern in which each unit area differs at the constant period, and an outgoing light, which repeats the light intensity distribution of the pattern, is imaged on a non-monocrystalline semiconductor film to melt an irradiation area, to generate crystals where the intensity of light is at the minimum in the light intensity distribution of the pattern, along a direction in which the light intensity increases,  
[Emphasis Added]

The Office Action seems to assert that the limitation of the at least one phase modulation unit being optically smaller than a radius of a point spread distribution range of the image formation optical system is an "intended use" limitation based on the desired radius of a point spread distribution from the optical system.<sup>2</sup>

However, it is respectfully submitted that Claim 42 recites a structural relationship between the phase modulation unit and the image formation optical system. The radius of the point spread distribution is a structural property of the image formation optical system since it depends on the structure of the image formation optical system, just as a focal length is a structural property of a lens. Thus, the claimed relationship between the optical size of the

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<sup>2</sup> See Office Action dated July 11, 2008, pages 4-5.

phase modulation unit and the radius of the image formation optical system defines a structural limitation, not an “intended use” limitation.

Further, as mentioned above, it should be noted that a focal length of a lens is a physical property of the lens, and is considered to be a structural limitation of the lens. Similarly, the radius of the image formation optical system is a structural limitation of the crystallization apparatus defined in Claim 42.

Accordingly, it is respectfully requested that the assertion in the Office Action that the limitation of the at least one phase modulation unit being optically smaller than a radius of a point spread distribution range of the image formation optical system is an “intended use” limitation, be withdrawn.

Further, it is submitted that the ‘620 patent does not teach, and the Office Action does not rely on the ‘620 patent to teach, the feature of providing a pattern in which a light intensity is at minimum at a central position and increases linearly towards a periphery in each unit area. Rather, the Office Action relies on the ‘386 patent for such a teaching.

The ‘386 patent is directed to a process of simply forming a silicon thin film having a crystallinity similar to that of single crystal silicon over a large area at a high throughput.<sup>3</sup> However, it is respectfully submitted that the ‘386 patent fails to disclose a pattern in which a light intensity is at minimum at a central position and increases linearly towards a periphery in each unit area. Rather, the ‘386 patent simply discusses that an intensity of a laser beam exhibits a cyclic strong-and-weak pattern.<sup>4</sup> The pattern of the ‘386 laser beam intensity does not *increase linearly towards a periphery in each unit area*, as defined in Claim 42.

Thus, no matter how the teachings of the ‘620 and the ‘386 patents are combined, the combination does not teach or suggest the linear increase in the light intensity, as defined in new Claim 42.

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<sup>3</sup> See the ‘386 patent, column 2, lines 26-29.

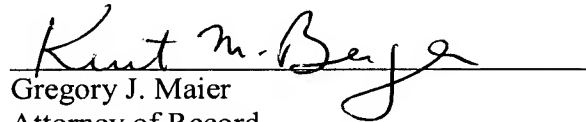
<sup>4</sup> Id. at column 13, lines 64-67, and Fig. 10.

Thus, it is respectfully submitted that independent Claim 42 (and all associated dependent claims) patentably defines over any proper combination of the '620 and the '386 patents.

Consequently, in view of the present amendment and in light of the above-discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Gregory J. Maier  
Attorney of Record  
Registration No. 25,599

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Kurt M. Berger, Ph.D.  
Registration No. 51,461